STAT[1]

Without oversight, electronic prescribing can harm patients

By Jason N. Doctor *and* Liisa T. Laine

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The use of electronic health record systems in doctors' offices and hospitals has hit a major speed bump, and rightly so, with the federal government winning a $145 million civil and criminal settlement[2] against Practice Fusion, a San Francisco-based electronic health record company. The company admitted to taking payments from a major drug company in exchange for dropdown menus that persuaded doctors to prescribe opioid medications to their patients.

Practice Fusion estimated[3] internally that the drug company — reported by Reuters[4] and STAT[5] to be Purdue Pharma — could gain nearly 3,000 new customers and increase opioid sales to the tune of $11.3 million by implementing the change.

The power of the alert was greater than anticipated. Between 2016 and 2017[6], more than 700,000 unique "pain care plans" were started because of the alert, and 20% to 33% of them involved opioids. More than 140,000 patients were prescribed opioids following an alert.

Astonishingly, this shady partnership took place at the height of the opioid epidemic when federal agencies were encouraging more judicious use of opioids.

Related: [5]

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Electronic prescribing is meant to make prescribing safer, less error-prone, and more efficient. It ensures that orders are in a standard format, legible, and complete. It gets medication orders to pharmacies more quickly and with less burden on the prescriber. It can also provide a more complete record of medications a patient is currently taking.

Yet as the Practice Fusion scandal shows, human behavior can corrupt systems built with the best intentions. And without proper oversight, other unintended harms may occur.

Our research team analyzed the effects of electronic prescribing by exploiting a large natural experiment in Finland[7], where a nationwide electronic prescribing system was rolled out across several municipalities over four years starting in 2010. We found that electronic prescribing increased medication use — but sometimes in deeply troubling ways. For example, electronic prescribing increased the dispensing of benzodiazepines, a central nervous system depressant commonly used to treat short-term anxiety, among younger patients

because it made obtaining prescription refills easier than before. This increase in benzodiazepine use appeared to be harmful: We found no evidence of improvements among these patients, such as decreased hospital admissions related to mental and behavioral health, but did observe increases in prescription drug abuse disorders and suicide attempts.

In the U.S., benzodiazepines are deemed a controlled substance, meaning prescriptions for them are regulated by the government because these drugs have a high potential for abuse and carry the risk of severe physical dependence. Deaths due to benzodiazepine overdose have skyrocketed[8], from 1,135 in 1999 to 11,537 in 2017. Though many factors contribute to these deaths, this rise coincided with the growth of electronic prescribing, which has been legal in all 50 states since 2016.

Before then, manually prescribing a controlled substance carried a considerable administrative burden. Prescribers had to keep their own records and share copies of these prescriptions with pharmacists and state agencies. The ordeal of high-risk prescribing may have made physicians more thoughtful in considering when it was worth doing. These barriers have been weakened by technology.

To protect patients from addiction, overdose, and even death, it may be necessary to rein in health information technology — or at least modify it.

Related: [9]

Prescribing opioids: Balancing pain relief and addiction prevention haunted my early days in medicine [9]

Our research group and others have focused on taming electronic prescribing by using scientific insights into human behavior that improve safety without great loss of efficiency. For example, in a 2016 study[10], we asked physicians to justify their antibiotic medication orders in real time using 256 characters or less when those orders seemed potentially inappropriate, such as when a physician diagnosed a patient with a viral infection. The justification would then appear in the patient's electronic record. Since poor justifications could engender reputational concerns, physicians became more reluctant to prescribe inappropriately and exhibited greater care. This intervention reduced inappropriate antibiotic prescribing by nearly 20%.

At the University of Pennsylvania, researchers have been studying the effects of medication default orders[11] — safe and cost-effective electronic prescription choices that are implemented if a physician takes no special action to change them. In a 2018 study[12] of opioid prescribing, they determined that by programming two emergency departments' electronic health record systems to default new opioid prescriptions to 10 tablets, when before it had been much higher, the median number of tablets prescribed for each patient encounter fell to 10. This was accomplished by dramatically increasing the number of times clinicians chose exactly 10 tablets by simply accepting the default dose — the easiest thing to do. Such a simple change was able to harness health information technology to lower patient risk.

Those two interventions were "homegrown" and have not become widely adopted as standards by electronic health record vendors. But they show the power of health information technology to improve outcomes with small changes to the system.

It is disheartening that some companies in the health information technology industry turn away from making drug prescribing safer in favor of easy profits. We believe the federal government should require

electronic prescribing safeguards that leverage scientific insights about how prescribers make choices to ensure that these systems improve health, not harm it.

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